Chapter 3

Command and Control

The ability of the FA battalion to execute C2 communications with its higher HQ, subordinate elements, sustainment forces, and supported forces is perhaps the greatest factor in determining whether or not the unit will accomplish its mission. C2 must be considered as a critical factor in the planning and execution of any tactical operation. This chapter has three sections. Section I addresses general communications information. Section II discusses C2 systems. Section III covers radio communications.

SECTION I – GENERAL COMMUNICATIONS INFORMATION

3-01. Communication is a command responsibility, essential to efficient C2 of a FA battalion and to its ability to provide effective FS. The commander's communications plans should address all elements of his command, to include supported, reinforced, and adjacent units. To establish a responsive and dependable communications system, the FA battalion must overcome several limitations:

- The battalion relies heavily on radio communications, as the speed of battle may prohibit the efficient use of wire.
- The battalion is authorized a limited number of CNRs, area common-user systems (ACUS), and Army data distribution systems (ADDS) to support multiple requirements.
- The battalion monitors multiple radio networks while maintaining CONOPS during displacement.
- The battalion communicates over long distances to many diverse elements, such as FISTs, FSEs, reinforcing units, higher HQ, and supported maneuver force.
- The battalion relies increasingly on data communications, which have shorter range capabilities than voice communications on CNR.

3-02. Communications systems differ according to the various means of communication, the unit's mission and its MTOEs. The various communication systems have different capabilities and limitations, and thus should be employed so that they complement each other to provide flexibility and redundancy. Communications reliability can be greatly increased by planning for and using all means available. The primary communications systems used in a FA battalion are CNR, ACUS, ADDS, wire, messenger, and, to a lesser extent, visual and sound systems.

RADIO SYSTEMS

3-03. Radio communication plays a major role in the C2 of FA battalion operations. Radios transmit a variety of media (voice, data, fax), and FA battalions increasingly use radios for communication between computer systems. Section III addresses combat net radios in more detail.

AREA COMMON USER SYSTEM

3-04. The ACUS is a digital battlefield telecommunication system. The corps and below ACUS is the MSE.

3-05. MSE provides secure, automatic digitized voice, data, and fax communications to the user, whether static or mobile. It replaces the existing area common-user multichannel communications system and radio teletype in signal and FA units. It is an area communications system extended by mobile telephone. MSE can be used for digital data transmission; however, its primary purposes in FA battalions are for voice and fax communications. An MSE net functions similarly to a civilian telephone system. Subscribers are assigned individual telephone numbers that can be dialed directly. Text and graphics can be transmitted in hard copy via the fax capability of the system.

3-06. Division and corps signal units establish the MSE system by positioning signal nodes throughout the division and corps AO. They place extension nodes near maneuver brigade and DIVARTY CPs and throughout rear areas.

3-07. FA battalions access the MSE system either by wiring into the extension nodes at brigade or higher level or by using mobile radiotelephones through the signal nodes. The FA battle command systems at FA battalions and firing batteries are not normally connected to the MSE network for digital data traffic because of the limited number of available MSE circuits, equipment, and extreme distances to extension nodes.

3-08. The FA battalion can use three types of MSE equipment (Figure 3-1).

- The MSRT terminal, AN/VRC 97, is a mobile MSE telephone that links into the MSE network through one of the radio access units (RAUs) positioned throughout the AO by a signal unit. The RAU picks up the signal from the MSRT and switches it into the nearest signal node. The FA battalion has several MSRTs that are usually mounted in the vehicles of key personnel, and a few stand-alone installation kits that allow vehicular MSRTs to be dismounted for use in the TOC and trains. This is the most common method used in the battalion.
- The digital nonsecure voice telephone (DNVT), TA-1048/U, is the conventional telephone of the MSE system. It converts voice signals into digital signals and transmits the converted data. The DNVT must be wired into a junction box (J-1077), which is located near the unit and connected by cable to the small extension node (SEN). The user is responsible for laying the wire to the junction box. However, since the distances are usually too extreme to accomplish this, the use of DNVT is usually limited to situations where the FA battalion's elements are in close proximity to an extension node. Such as when the BSOC is collocated in the brigade support area (BSA).

- The lightweight digital facsimile (LDF), AN/UXC-10, when connected to the MSE network through a DNVT, digital secure voice terminal (DSVT) or MSRT, will allow the battalion to send and receive text and graphics in hard copy.

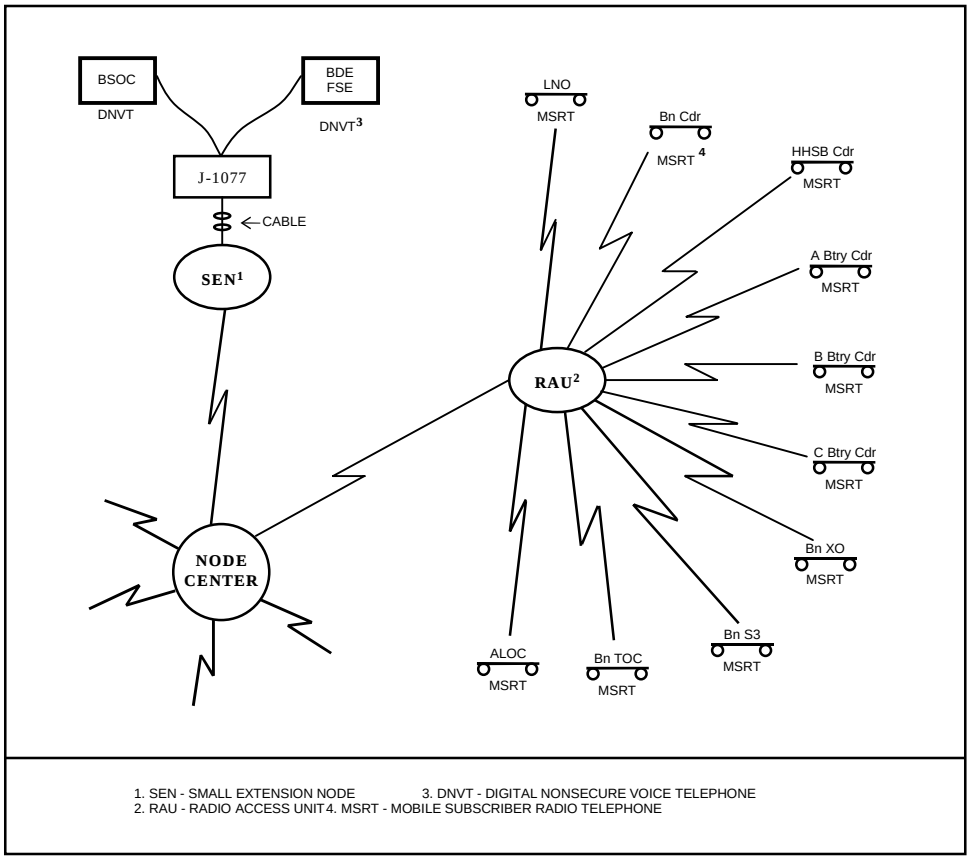

Figure 3-1. FA Battalion MSE NET

ARMY DATA DISTRIBUTION SYSTEM

3-09. ADDS is a C2 network that provides medium- and high-volume, real-time data communications to support the Army Battle Command System (ABCS). ADDS consists of Enhanced Position Location Reporting System (EPLRS) and the Joint Tactical Information Distribution System (JTIDS). It is deployed to provide data communications for those users that do not normally operate in or near CPs. CP-to-CP data traffic typically is exchanged over the ACUS. However, at the FA battalion, internal data distribution is primarily over secure frequency modulation (FM) radio, with EPLRS used mainly for its situational awareness information.

3-10. EPLRS passes targeting data, orders, situation reports, intelligence data, and messages between friendly units at the tactical level. It enhances situational awareness and aids in fratricide prevention by automatically tracking and identifying friendly units to other EPLRS equipped units. EPLRS interoperates with AFATDS. It provides secure, jam-resistant, near-

real-time data communications, position location reporting, navigation, and identification services. EPLRS radios have do not voice capability.

3-11. JTIDS links Army ADA sensors and C2 elements and other services' air defense elements. This is a joint asset and not organic to FA battalions.

MESSENGER SYSTEMS

3-12. Although messenger systems are not used extensively, they are used in several situations:

- For delivery of overlays, packages, equipment, or other items or correspondence not suitable to radio or wire delivery.
- During periods of radio silence or degraded communications.
- For delivery of classified correspondence that must be discreetly or personally delivered to a commander, or that may require an immediate discussion and reply.

3-13. Messenger communications can be slow and unreliable during poor weather and terrain conditions. Security may be an issue due to enemy forces operating behind friendly lines, hostile citizens or bandits, or close proximity to front lines, especially during rapidly fluctuating battles. Most FA battalions do not have dedicated messenger vehicles, and may have difficulty allocating one for extended messenger usage.

3-14. Use of a short checklist in the unit TSOP can facilitate the rapid, efficient use of messenger services when necessary. Security, training, and navigational skills of the driver, route planning, leader briefings, and such should all be addressed.

VISUAL AND SOUND SYSTEMS

3-15. Sound and visual systems of communication are generally used at battery and lower echelons. Use of visual and sound communications techniques must be well planned and coordinated to prevent confusion, miscommunication, and deception from the enemy. Lights, mirror flashes, or sounds from adjacent or passing units can be mistaken as the designated cue or signal. Repeated use of a signal may result in duplication and deception by an observing enemy force. Fires can result from improper use of pyrotechnics.

3-16. The use of visual and sound communications methods should be addressed in unit TSOPs. Rehearsals should be conducted under realistic conditions to ensure that battlefield smoke, noise, distances, or intervening terrain do not interfere with the signals.

COMMUNICATIONS RESPONSIBILITIES

3-17. The commander is responsible for the adequacy and proper use of the communications systems within his command and for their efficient operation in the systems of the next higher command. The commander can delegate the authority to establish, maintain, control, and coordinate the battalion's various communications means to a subordinate The following paragraphs discuss general communications responsibilities.

ECHELONS OF COMMAND

3-18. The senior unit is responsible for establishing communications with its subordinate units, whether organic or attached. This responsibility is primarily one of planning and directing the establishment of the linking communications systems since assets belonging to either the senior HQ or the subordinate unit may be used.

TACTICAL MISSIONS

3-19. Each of the four standard tactical missions has an inherent communications responsibility.

Direct Support

3-20. An artillery unit with the mission of direct support must establish communications with the supported maneuver unit HQ (supporting-to-supported relationship).

Reinforcing

3-21. An artillery unit with the mission of reinforcing must establish communications with the reinforced artillery unit HQ (reinforcing-to-reinforced relationship).

General Support Reinforcing

3-22. An artillery unit with the mission of GSR must establish communications with the reinforced artillery unit HQ (reinforcing-to-reinforced relationship). The senior artillery HQ must establish communications with the GSR unit (senior-to-subordinate relationship).

General Support

3-23. An artillery unit with the mission of GS does not have an inherent responsibility for establishing external communications with any other unit. However, the senior artillery unit must establish communications with its subordinate GS artillery units (senior-to-subordinate relationship).

BATTLE AREA

3-24. Adjacent commands must maintain communications with each other to ensure coordination of the combat effort. When facing the FLOT (left-to-right relationship), the command on the left establishes communications with the command on its right.

JOINT MAINTENANCE

3-25. Regardless of which unit is responsible for establishing communications, all units served by the system must help restore any communications system outage.

BATTALION S6 SECTION RESPONSIBILITIES

3-26. The S6 section maintains the communications and automation systems, operates retrans stations, and installs wire systems for the FA battalion. The

S6 section is organized with a section HQ, an automation management section, and a radio section. In some battalions, the S6 section also has a wire section. The exact composition of the S6 section varies with each type of battalion.

3-27. All elements of the battalion evacuate communications equipment for repair through the S6 section. The maintenance communications mechanics in the section perform organizational maintenance on battalion HQ communications equipment. Mechanics also provide on-site organizational maintenance and assistance for the subordinate units of the battalion.

3-28. The automation management section provides assistance with the establishment, operation, and maintenance of the battalion's automation systems. This includes hardware, software, networks, and automation security. Their networking functions include management and maintenance of internal LANs and connection to external wide area networks (WANs).

3-29. The radio section establishes and maintains the FM retrans station as required. Dual retrans capability is essential to maintaining FM voice and data communications over extended distances.

PLANNING CONSIDERATIONS

PLANS

3-30. The communications plan is designed to fulfill the requirements of a tactical mission. Planners use communications responsibilities, communications requirements, and the unit MTOE (which provides the communications means) to produce a standardized system. To meet specific requirements, commanders may modify their systems based on mission, enemy, terrain and weather, troops, time available, and civil considerations (METT-TC). The S6 assists the S3 in developing the communications plan during the MDMP process.

Voice and Data Nets

3-31. FA battalions use a combination of voice and data radio nets, with the mix determined by the MTOE, operational status of assigned equipment, METT-TC, and the unit's digital training level. If digital data capability is lost by the battalion or by one or more of the batteries, the voice nets can quickly become overburdened. A FA battalion communications plan must include plans for converting some data nets to voice while continuing to support the remaining digital data stations and for reconverting to data nets as that capability is restored. It is extremely important to keep voice traffic off digital data nets and vice versa. A voice backup plan should be developed for various contingencies, and rehearsed frequently. Many of the details can be included in the unit TSOP.

Planning Ranges

3-32. Range capabilities vary with the method of communications, the type and model of equipment used, terrain, weather, and atmospheric conditions. Jamming also degrades communications range. Ranges of combat net radios are discussed in Section III. Since rehearsal on the actual terrain and under

the exact conditions is often impossible, experience and thorough map reconnaissance are essential to proper estimation of communications ranges.

System Mixes

3-33. The factors of METT-TC have different effects on the communications means. The preferred communications setup is any system or mixture of systems that will communicate the information with the least exposure to enemy EW and not place total reliance on radio. A good communications plan maximizes the use of all available systems and backup plans to prevent over reliance on any one system. Much of a unit's basic communications planning can be addressed in the unit's TSOP.

Electronic Counter-Countermeasures

3-34. ECCM should be part of each battalion TSOP. They can improve OPSEC and preserve communications. ECCM techniques that have been found to be effective include the following:

- Require authentication on nonsecure nets if operating in the single channel mode of operation. Proper authentication procedures can eliminate intrusion and imitative deception.
- Do not mix plain and encrypted traffic on the same net. Doing so compromises the nature of the net, which makes interception and analysis easier for the enemy.
- Use secure equipment whenever possible. If the battalion is supporting a unit without secure capability, specify nets that will be unsecured and enforce secure discipline on all remaining nets.
- Limit transmissions to 5 seconds or less if operating in the single channel mode of operation. This makes interception and direction finding more difficult.
- Work through jamming if at all possible. Jumping nets should be a last resort. Remember that if jamming is bad enough to keep a unit from operating on a net, it may also keep many of the stations from receiving the signal to change frequencies. Anti-jam frequencies must be disseminated well in advance, so that subscriber stations can move to the alternate frequencies in sequence. Susceptibility to jamming is greatly reduced with frequency hopping CNRs.
- Use only authorized call signs from the automated net control device (ANCD) or SOI and change them on schedule.

OPERATIONS

3-35. Communications operations must take advantage of all techniques to facilitate mission accomplishment. Consider remoting transmitters, and using antenna multiplexers, directional antennas, and retrans.

Remoted Transmitters

3-36. Remoting transmitters allows for the separation of the RF emitter from the CP or other critical facilities. Also, remoting radios allows the transmitter to be sited for optimized communications while allowing the user to position in locations better suited to survivability. Remoting also minimizes on-site or

mutual interference while dissipating and reducing electronic signature. For additional information concerning remoting, see FM 24-18, *Tactical Single-Channel Radio Communications Techniques*.

Retransmission

3-37. Battalions use retrans operations to extend the area of coverage of a specific radio net or to reduce the electronic signature of a position. By use of a retrans site, RF power output can be reduced at the CP or other location. Overall net ranges can be doubled by the effective use of retrans.

3-38. FM, very high frequency (VHF) transmission distances are restricted by terrain and obstacles. The siting of radio equipment is often critical. The following are helpful hints for using FM retrans:

- As a minimum, make a map reconnaissance of the AO. S6, S2, and S3 should discuss retrans operations during the planning phase.
- Analyze the terrain for optimum communications.
- Select primary and alternate locations for retrans. Consider accessibility, defense, and logistical support.
- Arrange the timetable for site occupation and net operation. Don't wait until the retrans vehicle is needed before sending it out.
- Ensure operators are well trained. They must be able to provide manual relay if they have equipment failures.
- Ensure users are aware of the tactical situation and how retrans works.
- If retransmitting digital data traffic, program additional key and/or delay time to allow radios to key up.

3-39. If using a forward entry device (FED), plan to use a nearby battery FDC, FIST, or FSO to relay messages. This capability is useful when direct communication with an element is not possible. Relay addressing should be established per TSOP or as identified in the appropriate SOI.

Antenna Multiplexers

3-40. Using antenna multiplexers reduces the number of ground plane antennas required to operate multiple radios. The time required to align and tune these devices is considerably less than the time required installing multiple antennas. However, multiplexers also have several disadvantages, to include reduced communications range and significantly increased bit error rate (BER) for data traffic (the BER will vary for different frequencies).

Directional Antennas

3-41. Directional antennas reduce electronic signature in two directions while extending the range of the radio along the long axis of the antenna. Directional antennas should only be used in single-channel mode not frequency-hopping mode.

SECTION II – COMMAND AND CONTROL SYSTEMS

ARMY BATTLE COMMAND SYSTEMS

3-42. ABCS is designed to provide the battle commander and his staff with a common operational picture, as well as all the information necessary to effectively plan, coordinate, control, and direct the battle. This includes the integration of battlefield functional area C2 systems (BFACS) that extend from corps to brigade, with some components at the battalion level, that interface with both higher and lower ABCS systems. The primary components of ABCS include:

- AFATDS.
- Maneuver control system (MCS).
- All source analysis system (ASAS).
- Air-missile defense planning and control system (AMDPCS).
- Combat service support control system (CSSCS).
- The Tactical Airspace Information System (TAIS).
- The Global Command and Control System-Army (GCCS-A).
- Force XXI Battle Command - Brigade and Below (FBCB2) system.

3-43. ABCS is interoperable with joint and multinational C2 systems at upper echelons, and it is vertically and horizontally integrated at the tactical and operational levels. For a more detailed discussion of ABCS refer to FM 100-34, *Command and Control*.

FA TACTICAL DATA SYSTEMS

3-44. The FATDS family of automation continues to grow with the fielding of newer, automation equipped weapon systems, new or upgraded handheld terminal units (HTUs), and improved hardware and software versions for all existing systems. While this section addresses only the primary FA C2 systems, the FATDS family currently consists of the following systems.

- Primary tactical C2 systems - AFATDS, IFSAS, LTACFIRE, FDS.
- Observer, and other systems – forward observer software, FEDs, HTUs.
- Weapon platform automation systems.
- Radars - AN/TPQ-36, 37, 46, and 47.
- Met systems
  - AN/TMQ-31 – meteorological data system (MDS).
  - AN/TMQ-38 – meteorological measuring set (MMS).

AFATDS

3-45. AFATDS is an integrated FS asset manager that operates as part of a networked tactical data processing system. It provides decision aids and an information system for the control, coordination, and synchronization of all types of FS means. It uses common hardware/software from the ATCCS program. AFATDS interfaces with the other four BFACS, via the common operating environment (COE), using a combination of either a limited set of messages or an ability to print data for distribution. The ST 6-3 series will

provide detailed information concerning the interfaces and message exchange between AFATDS and the other systems.

3-46. AFATDS is also designed to interface across the battlespace with all existing and future FS systems, other ABCS BFACS, other services, allied forces (German Adler, United Kingdom Bates, French Atlas, & Italian SIR) and joint C2 systems.

3-47. AFATDS is composed of a common suite of hardware and software in varying configurations at different operational facilities (OPFACs) interconnected by tactical communications. Upgrades to both hardware and software occur periodically, and provide increased capability and performance. Because of this, the S3 and S6 must periodically verify the compatibility of their systems with those of the units with which they may operate.

3-48. AFATDS automates screening and filtering of potential targets and mission requests, to include target clearance and coordination in accordance with the maneuver commander's targeting guidance and attack criteria. Decision aids permit fully automated fire mission processing. For example, in contrast to IFSAS/FDS/LTACFIRE, AFATDS will prioritize fire missions based on target value analysis (TVA) and ensure that fire missions comply with FSCMs and unit zones of responsibility. It is also capable of deciding which type of FS asset should engage a particular target (for example, FA, mortars, attack helicopters, naval gunfire, or air) and recommending the best attack method for a given system (e.g., volleys, ammunition type, and firing unit). Although commanders can specify which missions to stop for review/coordination and can resort to voice execution, human intervention is not usually recommended. AFATDS was designed to plan and execute automatically for optimum efficiency.

INITIAL FIRE SUPPORT AUTOMATION SYSTEM

3-49. IFSAS is an interim tactical FD system that provides automated C2 capability to FA units until AFATDS is fully fielded. IFSAS consists of tactical FD software ported to lightweight computer units (LCUs). IFSAS can send and receive digital communication via radio and wire communications.

LTACFIRE

3-50. LTACFIRE is a compact and transportable C2 system for FA units in light divisions. It is similar to IFSAS.

FIRE DIRECTION SYSTEM (FDS)

3-51. The FDS performs tactical FD processing in MLRS units. The FDS receives processes, and transmits data on fire units, ammunition and targets. In addition, the FDS maintains data bases on fire units, munitions, and tactical fire plans/situations. FDS software runs on a LCU.

AUTOMATION CONSIDERATIONS

3-52. With the periodic upgrades in hardware and software, one of a battalion's greatest challenges is maintaining a high level of digital expertise.

FA battalions must regularly allocate time for digital data training, with some of that time focused on leader and collective training. Additional automation considerations include:

- Provide OPFAC focused operator training to leaders that are tactically knowledgeable, but weak on their automation systems. Leaders must be able to expertly operate the system if necessary, especially in smaller sections where personnel shortages have greater impact.
- Identify exceptional operators, and provide them training on the tactical and situational awareness functions of the section. Skilled operators should understand how to "fight" the system, not just enter and extract data.
- Identify the most skilled leaders (officer and NCO) and assign training and first line troubleshooting responsibilities. Clearly identify relationships and responsibilities of these "field" experts and the automation technicians in the S6 automation section.
- Establish guidelines in unit TSOPs that describe who is authorized to change databases and troubleshoot systems.
- Assign battalion level database management duties to someone, usually in the S3 section. This person assists the S3 and S6 in:
  - Developing the standard battalion database (startup and communications data and architecture, guidances, filters, etc.), and any variants necessary for particular wartime missions.
  - Establishing a database naming/numbering/dating system that helps ensure all battalion elements can clearly identify which database is in use, and when changes have been made.
  - Coordinating and disseminating battalion database requirements and changes with the senior FA HQ, subordinate elements, and when applicable, the supported maneuver force and any units with which the battalion may have a wartime or training relationship.
  - Coordinating the exchange and integration of databases with all other units during wartime operations and peacetime training.
- Maintain regular communication with other units in wartime missions and training. Identify hardware and software version and interface issues (use the ST 6-3 series). Seek out training opportunities with units that have different equipment (e.g., AFATDS-IFSAS).
- Develop a plan for short notice software-only and hardware/software upgrades. Identify key leaders that would help a new equipment training team or retrofit team in quickly upgrading the battalion to the newest equipment (which may occur prior to deployment or upon arrival in theater).
- Develop basic LAN management skills in key OPFACs (e.g., TOC, brigade FSE) to reduce the burden on the automation section. See FM 24-7, *Tactical Local Area Network (LAN) Management*, for detailed LAN information.
- Train on switching from data to voice operations and the reverse. Also practice digital CONOPS and MSU.
- Understand and monitor range limitations of digital data traffic. Establish plans for retrans or rerouting of digital data communications.

SECTION III – RADIO COMMUNICATIONS SYSTEMS

COMBAT NET RADIOS

3-53. The CNR is the primary means for FA C2, FD, and FS coordination, especially within a FA battalion and a maneuver brigade. The battalion uses CNRs for voice and data communications.

3-54. The single-channel ground and airborne radio system (SINCGARS) is the FA battalion's primary radio system. SINCGARS replaces the older series of radios as depicted in Table 3-1. Its main features are resistance to jamming through frequency hopping and increased capacity of 2,320 channels. SINCGARS is interoperable with AN/VRC 12 series radios only in the fixed frequency mode.

3-55. The S6, in conjunction with the S3, must perform frequency management and coordination to prevent frequency interference and to maximize communications capabilities.

Table 3-1. Radio Set Comparison

NOMENCLATURE	REPLACES	COMPONENTS (BASIC ISSUE ITEMS)				POWER OUTPUT
		RT	VEH ADAPT	DISMOUNT KIT[1]	PA	
Manpack AN/PRC-119	AN/PRC-25/77	1		1		LO, M, HI
Vehicular short-range AN/VRC-87	AN/VRC-53/64	1	1			LO, M, HI
Vehicular short-range dismount AN/VRC-88	AN/GRC-125/160	1	1	1		LO, M, HI
Vehicular long-range or vehicular short-range AN/VRC-89	AN/VRC-12/47	2	1		1	LO, M, HI, PA
Vehicular long-range AN/VRC-90	AN/VRC-43/46	1	1		1	LO, M, HI, PA
Vehicular long-range or vehicular short-range dismount AN/VRC-91	AN/GRC-160 plus AN/VRC-46	2	1	1	1	LO, M, HI, PA
Dual vehicular long-range AN/VRC-92	AN/VRC-45/49	2	1		2[2]	LO, M, HI, PA

1. Dismount kit includes manpack antenna, battery case/interconnecting box and handset.
2. Requires a power amplifier mount for second power amplifier.

LEGEND:
ADAPT = Adapter
HI = High
M = Medium
LO = Low
RT = Receiver-Transmitter
PA = Power Amplifier
VEH = Vehicle

PLANNING RANGES

3-56. The FM radio planning ranges differ for voice and data communications. Although limited in range, SINCGARS range can be significantly extended with directional antennas, retrans stations, or relays. Planning ranges for SINCGARS and other radios are shown in Table 3-2. Planning ranges for data transmission are usually less than for voice transmission (1/2 to 2/3 the planning of voice). In the frequency-hopping mode, data transmission may be reduced as much as 50 percent, depending

on the data rate set on the radio. The rule is the higher the data rate, the lower the planning range.

Table 3-2. Planning Range with WHIP Antenna

RADIO PLANNING RANGES				
RADIO	**PWR (L)**	**PWR (M)**	**PWR (H)**	**PWR AMP**
160 Series	0-8 km			
12 Series	0-8 km		0-40 km	
SINCGARS	0-400 meters	0-5 km	0-10 km	0-40 km
NOTE: The maximum range when transmitting digital data using a manpack radio on H power setting is 4 km.				

ANTENNAS

3-57. Long distances between transmitter and receiver, unfavorable terrain, and other conditions can cause poor communications or lack of communications. Units can often overcome this problem by the use of the right antenna. When the tactical situation allows, the battalion FDC, the BOCs, and POCs should use an extended-range antenna, the OE-254/GRC, or the OE-303/GRC to obtain the maximum planning range of their radios.

3-58. To obtain the maximum efficiency of an antenna, consider the following:

- An antenna site should not be located in or near obstacles such as tunnels, overpasses, or steel bridges because they can block or reflect signals.
- Trees with heavy foliage and dense underbrush can absorb signals and should be avoided if possible.
- Do not set up antennas near wire line poles and high-tension power lines. They can introduce interference and absorb part of the radio signals. This also constitutes a safety hazard.

SIGNAL OPERATING INSTRUCTIONS

3-59. In addition to the radios and antennas, radio communications relies increasingly on the battlefield electronic SOI system. The SOI system is a decentralized system for frequency management and the publication of unit level SOI. The electronic SOI is designed to provide more responsiveness to rapidly changing and highly mobile battlefield conditions. The system, which replaces the paper SOI, consists of a basic generation unit and an ANCD. Distribution channels are the same as those now used for the paper SOI.

FA BATTALION RADIO NETS

3-60. Radio communications systems are divided into separate groupings called nets. This division is based on the purposes for which the nets are used. A radio net is a channel, frequency, or sub-frequency with more than one subscriber for the purpose of transmitting information related to the mission requirements. Each net has a controlling station called the net control station (NCS). The net may be a "free" net, in which all stations are free to contact one another at any time, or a "directed" net, in which all stations must contact the NCS for permission to contact other subscribers.

Standard Radio Nets

3-61. The FA uses a set of standard radio nets for all of the standard tactical missions. This net standardization enables units to quickly and accurately interface with each other. Standard net structures and purposes should not be arbitrarily changed except to tailor them to a modified mission. Such modifications should be kept to a minimum. Standard net structures consist of the net titles, purposes, users, and equipment. Net structure information should be amplified in unit TSOPs.

NET TITLES / DESCRIPTIONS

3-62. Radio nets are usually titled and described in several ways:

- Controlling HQ (DIVARTY, battalion, battery, etc.).
- Purpose - command (Cmd), FD, intelligence.
- Communication system - MSE, frequency spectrum (high frequency [HF], VHF, ultrahigh frequency [UHF]), and/or modulation (FM, amplitude modulated [AM] or single sideband [SSB] a form of AM).
- Method of communication (voice [V], facsimile [fax], or data [D]).
- Internal/external.

3-63. For example, the battalion operations/fire (VHF-FM) (data) net is abbreviated as Bn Ops/F (VHF-FM) (D) net.

3-64. TSOPs should designate priorities for all battalion radio nets. This facilitates repairs, troubleshooting, retrans assignments, and anti-jamming efforts. Normal net priorities are FD, FS, C2, administration, and logistics nets. TSOP priorities for radio nets may need to be modified based on the communications situation and/or operational requirements.

FA BATTALION RADIO NET DESCRIPTIONS

3-65. FA battalions control and operate on many types of radio nets. Most FA battalions operate on approximately 12-17 primary internal and external nets, and may possibly monitor or operate on several additional external nets on an as required basis. Most FA battalions use two internal voice nets – (Bn Cmd and Bn Admin/Log). Usually, there are four or five internal digital data nets (Bn Ops/F, FD 1,2,3, and Bn TA/Intel). FA battalions that provide FS teams to maneuver units will also manage the FS nets. The brigade FSE operates on the maneuver brigade FS net. The battalion FSEs operate on the brigade FS net and on their own internal maneuver battalion FS net (the maneuver battalion mortar net may be used for this purpose in some units). The FA battalion FDC monitors the brigade FS net.

3-66. Most FA battalions will also operate on several external voice and data nets to their Force FA HQ. A unit's FA tactical mission may also require it to operate on maneuver unit nets and/or a reinforced FA battalion's nets.

3-67. All AFATDS-equipped units operate on both data and voice nets. To reduce the number of transmissions, voice nets should handle only traffic that cannot be transmitted digitally. Since voice traffic will overlay data transmissions, voice traffic on digital data nets should be limited to emergency situations.

3-68. A FA battalion CNR matrix is shown in Table 3-3. This matrix depicts what net(s) the unit should enter and at what level of communications based on the battalion's tactical mission (DS, R, GSR, or GS). Actual equipment, nets, and net titles may vary based on MTOEs, unit organizations, TSOPs, and other situational or unit factors.

Table 3-3. FA Battalion Combat Net Radio Matrix

NETS	MISSION			
	DS	R	GSR	GS
Internal				
Bn Cmd (VHF-FM) (V)	X	X	X	X
Bn Ops/F (VHF-FM) (D)	X	X	X	X
Bn FD 1 (VHF-FM) (D)	X	X	X	X
Bn FD 2 (VHF-FM) (D)	X	X	X	X
Bn FD 3 (VHF-FM) (D)	X	X	X	X
Bn TA/Intel (D)	X	A	A	A
Bn Admin/Log (VHF-FM) (V)	X	X	X	X
External				
Force FA Cmd (VHF-FM) (V)	X	X	X	X
Force FA Ops/F 1, 2, 3, (VHF-FM) (D or V)	X[1]	X[1]	X[1]	X[1]
Force FA Command Fire (CF) (MSE V-FAX)	X	X	X	X
Force FA TA/Intel (VHF-FM) (V or D)	X	X	X	X
Force FA Survey (VHF-FM) (V)	A	A	A	A
Force FA Admin/Log (VHF-FM) (V)	A	A	A	A
Supported Unit Admin/Log (VHF-FM) (V)	A	A	A	
Mvr Unit Ops/Intel (VHF-FM) (V)	X	X	X	X
Mvr Bde/Reg/Div/ or Corps FS (VHF-FM) (V)	X	X	X	X
Mvr Bn/Sqn FS (VHF-FM) (V) (3-4 nets)	X			
Mvr Bn Mortar FD (D)	X			
Reinforced Bn Cmd (V)		X	X	
Reinforced Bn Ops/F (VHF-FM) (D or V)		X	X	
Naval Gunfire (HF-AM) (V)	X			
Div FS (UHF-TACSAT) (D)	X	X	X	A

X = Full-time net subscriber, A = As required, D = Data, V = Voice, [1] =Ops/F 1, 2, or 3 as assigned
Mvr = maneuver, Reg = regiment, Sqn = squadron, TACSAT = tactical satellite

3-69. Tables 3-4, 3-5, 3-6, and 3-7 show subscribers and the internal and external radio nets for each tactical mission. The radio nets of the FA battalion must meet the requirements of the tactical mission assigned - DS, R, GSR, or GS. The organization of the FA battalions may differ.

3-70. Some battalions are organized with organic sections that provide FISTs, maneuver battalion FSEs, and maneuver brigade FSEs. Other battalions do not have these elements.

3-71. Apart from these differences in organization, the FD, operations, and intelligence sections are identical. This similarity forms the basis of the radio networks outlined in the preceding paragraphs and in the following tables.

Table 3-4. Direct Support Mission Radio Net Matrix

	INTERNAL NETS					EXTERNAL NETS												
Element	Bn Cmd (V)	Bn Ops/F (D)	Bn FD 1,2,3 (D)	Bn TA/Intel (D)	Bn Admin/Log (V)	Force FA Cmd (V)	Force FA Ops/F 1,2,3 (D)	Force FA CF (MSE V-FAX) (V/F/D)	Force FA TA/Intel (D)	Force FA Survey (V)	Force FA Admin/Log (V)	Mvr Bde Admin/Log (V)	Div FS (TACSAT) (D)	Mvr Bde FS (V)	Mvr Bn FS (V)	Mvr Bn Mortar FD (D)	Mvr Bde Ops/Intel (V)	Naval Gunfire (HF) (V)
Bn Cdr/FSCOORD	X		X[1]			X		X						X				
Bn XO	X				X			X			A	A						
S3	X							X						X				
S6	X				A						A	A						
Bn FDC	C	N	N	L			L							C				
Bn Ops	N	L		L	A	X	X[1]	X		A			X	X				X
Bn Intel/S2	C	L			N				X					C			X	
TAC Cmd Center	X	X	X	A	A	A	A[1]	X	A					X			A	
Survey Sections	X			X						A								
Radar (Atch /Org)	X		A[1]	X	A				X									
Retrans Team	X	X																
Btry Commanders	X		X[1]		A			X										
Btry Ops Center	X	X	X[1]											X				
Btry/Plt FDC	X	X	X[1]		A									X	A			
Btry Spt Plt Ldr [2]					X													
Mvr Bde FSE	X	X	X[1]		A		A[1]	X					X	N				X
Mvr Bde FSO	X	A	X[1]				A[1]							X				
Mvr Bn FSE		X	X[1]											X	N	X		X
Mvr Bn FSO			A[1]											A	X	X		
FIST HQ			X[1]											A	X	X		
Forward Observer			A[1]											A	A	X		
COLT/Striker			X[1]										X[3]	X	A	A	X	
ALOC/S4	X				N			X			A	A						
BSOC/S1	X				X			X			A	A						
UMCP					X							A						
BAO	X				X							A						
BMO					X							A						
Wrecker					X													
Recovery Vehicle					X													
Medical Officer					X							A						
Ambulance					X													
Unit Ministry Tm					X													

[1] – One of the 3 nets as directed by the NCS [2] – Where applicable [3] – COLT/Striker Plt HQ only

Atch = Attached, COLT = Combat observation/lasing team, Spt = support,
UMCP = Unit maintenance collection point

X = Full-time subscriber, A = As required, N = Net control station, L = LAN/Wire, C = Control unit/TOC Intercom

Table 3-5. Reinforcing Mission Radio Net Matrix

	INTERNAL NETS					EXTERNAL NETS										
Element	Bn Cmd (v)	Bn Ops/F (D)	Bn FD 1,2,3 (D)	Bn TA/Intel (D)	Bn Admin/Log (V)	Reinforced FA Cmd (V)	Force FA Cmd (V)	Reinforced Ops/F (D)	Force FA Ops/F 1,2,3 (D)	Force FA CF (MSE-V-FAX)(V/F/D)	Force FA TA/Intel (D)	Force FA Survey (V)	Force FA Admin/Log (V)	Sptd Unit Admin Log (V)	Mvr Bde FS (V)	Mvr Bde Ops/Intel (V)
Bn Cdr	X		X[1]			X	A			X						
Bn XO	X				X					X			A	A		
S3	X									X						
S6	X				A								A	A		
Bn FDC	C	N	N	L				L	L						C	
Bn Ops	N	L		L	A	X	A	X	X[1]	X		A			X	
Bn Intel/S2	C	L		N							X					A
TAC Cmd Center	X	X	X	A	A	X	A	X	X[1]	X	A				A	A
Survey Sections	X			X								A				
Radar (Atch/Org)	X		A[1]	X	A						A					
LNO Section	X	X								X						
Retrans Team	X	X														
Btry Cdrs	X		X[1]		A					X						
Btry Ops Center	X	X	X[1]		X										X	
Btry/Plt FDC	X	X	X[1]		A										X	
Btry Spt Plt Ldr [2]					X											
ALOC/S4	X				N					X			A	A		
BSOC/S1	X				X					X			A	A		
UMCP					X									A		
BAO	X				X									A		
BMO					X									A		
Wrecker					X											
Recovery Vehicle					X											
Medical Officer					X									A		
Ambulance					X											
Unit Ministry Tm					X											

[1] – One of the 3 nets as directed by the NCS [2] – Where applicable

X = Full-time subscriber, A = As required, N = Net control station, L = LAN/Wire, C = Control unit/TOC Intercom

Table 3-6. General Support Reinforcing Mission Radio Net Matrix

	INTERNAL NETS					EXTERNAL NETS										
Element	Bn Cmd (V)	Bn Ops/F (D)	Bn FD 1,2,3 (D)	Bn TA/Intel (D)	Bn Admin/Log (V)	Reinforced FA Cmd (V)	Force FA Cmd (V)	Reinforced Ops/F (D)	Force FA Ops/1,2,3 (D)	Force FA CF (MSE-V-FAX) (V/F/D)	Force FA TA/Intel (D)	Force FA Survey (V)	Force FA Admin/Log (V)	Sptd Unit Admin Log (V)	Mvr Unit FS (V)	Mvr Unit Ops/Intel (V)
Bn Cdr	X		X[1]			X	X			X						
Bn XO	X				X					X			A	A		
S3	X									X						
S6	X				A								A	A		
Bn FDC	C	N	N	L				L	L						C	
Bn Ops	N	L		L	A	X	X	X	X[1]	X		A			X	
Bn Intel/S2	C	L		N							X					A
Tac Cmd Center	X	X	X	A	A	X	X	X	X[1]	X	A				A	A
Survey Sections	X			X								A				
Radar (Atch/ Org)	X		A[1]	X	A						X					
LNO Section	X	X								X						
Retrans Team	X	X														
Btry Cdrs	X		X[1]		A					X						
Btry Ops Center	X	X	X[1]		X										A	
Btry/Plt FDC	X	X	X[1]		A										A	
Btry Spt Plt Ldr [2]					X											
ALOC/S4	X				N					X			A	A		
BSOC/S1	X				X					X			A	A		
UMCP					X									A		
BAO	X				X									A		
BMO					X									A		
Wrecker					X											
Recovery Vehicle					X											
Medical Officer					X									A		
Ambulance					X											
Unit Ministry Tm					X											

[1] – One of the 3 nets as directed by the NCS [2] – Where applicable

X = Full-time subscriber, A = As required, N = Net control station, L = LAN/Wire, C = Control unit/TOC Intercom

Table 3-7. General Support Mission Radio Net Matrix

	INTERNAL NETS					EXTERNAL NETS								
Element	Bn Cmd (V)	Bn Ops/F (D)	Bn FD 1,2,3 (D)	Bn TA/Intel (D)	Bn Admin/Log (V)	Force FA/FA Bde Cmd (V)	Force FA/FA Bde Ops/F 1,2,3 (D)	Force FA CF (MSE-V-FAX) (V/F/D)	Force FA TA/Intel (D)	Force FA Survey (V)	Force FA/FA Bde Admin/Log (V)	Sptd Unit Admin Log (V)	Mvr Div/Corps FS (V)	Mvr Div/Corps Ops/Intel (V)
Bn Cdr	X		X[1]			X		X						
Bn XO	X				X			X			A	A		
S3	X							X						
S6	X										A	A		
Bn FDC	C	N	N	L			L						C	
Bn Ops	N	L		L	A	X	X[1]	X		A			X	
Bn Intel/S2	C	L		N					X					A
Tac Cmd Center	X	X	X	A	A	X	X[1]	X	A				A	A
Survey Sections	X			X						A				
Radar (Atch/Org)	X		A[1]	X	A				X					
LNO Section	X	X												
Retrans Team	X	X												
Btry Cdrs	X		X[1]		A			X						
Btry Ops Center	X	X	X[1]		X								X	
Btry/Plt FDC	X	X	X[1]		A								X	
Btry Spt Plt Ldr [1]					X									
ALOC/S4	A				N			X			A	A		
BSOC/S1	A				X			X			A	A		
UMCP					X							A		
BAO					X							A		
BMO					X							A		
Wrecker					X									
Recovery Vehicle					X									
Medical Officer					X							A		
Ambulance					X									
Unit Ministry Tm					X									

[1] – One of the 3 nets as directed by the NCS [2] – Where applicable

X = Full-time subscriber, A = As required, N = Net control station, L = LAN/Wire, C = Control unit/TOC Intercom

DIRECT SUPPORT MISSION

3-72. Any FA battalion may be called upon to perform the DS mission, and several FA battalion TOEs are specifically designed to support heavy or light, maneuver brigades or regiments. While the types and quantities of communications equipment in a DS battalion will vary widely with the battalion structure, the radio nets (see Table 3-4) will generally follow the pattern outlined below.

INTERNAL NETS

3-73. The DS battalion normally operates on about six to seven internal nets. The DS Bn Cmd (VHF-FM) (voice) net is used for C2 and collection and dissemination of tactical information and intelligence. The DS battalion operations section is the NCS.

3-74. The Bn FD 1, 2, and 3 (VHF-FM) (data) nets are identical. They are used for tactical and technical FD from FOs through the DS battalion FDC to the controlling FDC. The FD nets (FD 1, FD 2, and FD 3) should be assigned according to the mission and the battalion's communications status, not necessarily one per battery. However, one technique frequently used under ideal communications, is to assign one firing battery per net, with the FOs, Strikers, FISTs, and Bn FSEs spread evenly across the three nets. This allows for quickfire linkages and for the direct exchange of message-to-observer traffic. The NCS for all three FD nets is the battalion FDC. One or more of the nets can be established as a voice nets if necessary.

3-75. The Bn Ops/F (VHF-FM) (data) net is used for FS planning and coordination between FA elements, for MSU operations and for tactical and technical FD to reinforcing artillery units. The NCS is the battalion FDC section. The Ops/F net may be established as a voice net during degraded operations.

3-76. The Bn TA/Intel (VHF-FM) (data) net is used for exchanging targeting, counterfire, survey, meteorological, and intelligence information within the battalion. These elements can include Firefinder radars, survey teams, and met teams. The NCS is either the Bn S2 section, or the Bn O&I section in light combined command posts.

3-77. The Bn Admin/Log (VHF-FM) (voice) net is used for coordinating all battalion administrative and logistical matters. The battalion ALOC is the NCS.

EXTERNAL NETS

3-78. The DS battalion may operate on several external nets (the actual number in part depends on availability of communications assets and unit SOP). Additional information on these external nets is in FM 6-20-2, FM 6-20-40, and FM 6-40, *Tactics, Techniques, and Procedures for Field Artillery Manual Gunnery*.

3-79. The Force FA Cmd (VHF-FM) (voice) net is used for C2, tactical operations, intelligence, and voice coordination with all artillery elements and units (organic, attached, and reinforcing). The force FA operations section is the NCS.

3-80. The Force FA Ops/F 1, 2, and 3 (VHF-FM) (data) nets are identical. They are used for tactical FD, FS planning and coordination, MSU operations, and met data. Normally, each of the DS battalions will be in one of the nets. Other artillery elements, such as the AN/TPQ-36 and AN/TPQ-37 radars, may be in one of these nets depending on the task organization. The FSEs at the division tactical CP and the division main CP, if not collocated with force FA CP, will also be in one of these nets. The force FA FCE is the NCS.

3-81. The Force FA CF (MSE) (V-FAX) network is a multipurpose area network. The battalion has voice, fax, and data (if necessary) access to the force FA HQ and other subscribers. It is used for C2 and FD coordination with units at greater-than-VHF ranges from the force FA HQ and in situations where hard copy message traffic is required.

3-82. The battalion S2 will operate on the Force FA TA/Intel (VHF-FM) (data) net, exchanging TA, counterfire, and intelligence information with the force FA S2. If the battalion controls a radar section, the section may also operate on the Force FA TA/Intel net.

3-83. If the DS battalion receives a reinforcing battalion, the reinforcing unit will normally be a subscriber on the DS unit's Ops/F net. However, the DS unit may sometimes enter the reinforcing Bn Ops/F (VHF-FM) (data) net if necessary. (This net is not displayed in the Table 3-4 matrix and must be resourced by LNO's from the reinforcing unit, or shifting radio assets within the reinforced unit.)

3-84. As required, the Bn operations and survey sections will operate on the Force FA Survey (VHF-FM) (voice) net (in units where it is still being used). This net, which is being phased out due to the reduction in PADS survey elements, provides for exchange of survey information with the force FA HQ. In most cases, the Force TA/Intel (D) Net has superceded this net.

3-85. As required, the Bn CSS staff, ASOC, and BSOC, operate on the Force FA Admin/Log (VHF-FM) (voice) net. This net is used to coordinate CSS operations and to exchange CSS information with the force FA HQ.

3-86. The supported Maneuver Unit Ops/Intel (VHF-FM) (voice) net is a maneuver net used for operational and intelligence traffic. The DS battalion S2 operates in this net to transmit and receive operational and intelligence information. This net is also used for cross-coordination between scouts and Strikers working forward in the brigade area, and their S2 sections. Non-FA observers, forward scouts for instance, may call for fire on this net. The maneuver unit S2 section is the NCS.

3-87. The supported Maneuver Unit FS (VHF-FM) (voice) nets are used for voice FS coordination and planning. They are also used to request and coordinate close air support (CAS) and naval surface fire support (NSFS) operations. Non-FA observers may call for fire in this net. The maneuver brigade/regiment FSE is the NCS for the Brigade/Regiment FS net. The DS battalion TOC operates in this net to provide immediate reaction to the maneuver commander's FS requirements. Each battalion/squadron FSE will also operate a battalion/squadron FS net, with the battalions/squadron FSE as the NCS. While the battalion TOC normally doesn't monitor these nets,

the firing batteries or platoons may do so when close coordination and quickfire procedures are required.

3-88. The FS personnel supporting the maneuver battalion/squadron will also operate on the Maneuver Battalion/Squadron Mortar FD (VHF-FM) (data) net. This is used for data fire missions. The maneuver unit's mortar platoon is the NCS.

3-89. The supported unit Admin/Log (VHF-FM) (voice) net is used, as required, for coordination of administrative and logistical matters. The supported unit ALOC is the NCS.

3-90. The DS battalion TOC, brigade FSE, and COLT/Striker platoon HQ may also operate on the Division FS (TACSAT) (data) net. This net is used to coordinate fires and exchange FS data across extended ranges within the division area.

3-91. The battalion TOC, brigade FSE, and battalion FSE may also operate on a Naval Gunfire (HF) (voice) net. The unit uses this net to communicate with the ship(s) providing naval gunfire support.

REINFORCING MISSION

INTERNAL NETS

3-92. For a FA battalion assigned the R mission (see Table 3-5), the internal nets are the same as those required for the DS mission.

EXTERNAL NETS

3-93. External nets change to reflect the responsibility of reinforcing to reinforced. The battalion enters the Reinforced Bn Cmd (VHF-FM) (voice) net. The purpose is to be immediately responsive to the needs of the reinforced artillery unit. The battalion enters the Reinforced Bn Ops/F (VHF-FM) (data) net. The purpose is to receive tactical FD from the reinforced artillery unit.

3-94. The battalion CSS staff, BSOC, and ASOC may also, as required, enter the Reinforced FA unit's Admin/Log (VHF-FM) (voice) net, and/or the supported maneuver unit's Admin/Log net to coordinate CSS operations and exchange CSS information.

3-95. The battalion continues as a subscriber to the Force FA HQ CF (MSE) (V-FAX) network and, as required, the Force FA Ops/F 1, 2, or 3 net, Force FA TA/Intel net or Force FA Survey net, and Force FA Admin/Log net.

3-96. The battalion monitors the maneuver FS and Ops/Intel (VHF-FM) voice nets, as required.

MUTUAL SUPPORT UNIT

3-97. Mutual support between two battalions, normally a direct support and reinforcing battalion, means that the computer(s) of one provides tactical FD for the other when that unit must displace or has catastrophic equipment failure. The requirement for mutual support operations in situations of equipment failure has been minimized due to the increasing numbers and

capabilities of automated C2 equipment in FA battalions. Internal continuity of operations procedures normally allow a battalion to retain tactical and technical control of its assets. However catastrophic equipment failure or hasty, survival TOC displacement may require reliance on MSU techniques.

3-98. When the reinforcing battalion must take control of the DS battalion firing batteries for tactical FD, it will operate on the DS battalion's three FD nets. When the DS battalion must provide tactical FD to the reinforcing battalion's firing batteries, it will do so on the reinforcing battalion's Ops/F net.

3-99. To establish the required digital link, the two battalions will use either the higher HQ Ops/F (1, 2 or 3) net or one of the two battalion's Ops/F nets to provide the computer-to-computer link necessary to properly exchange data.

3-100. These techniques could also be used between two GS/GSR battalions. In most cases the supporting battalion would assume control of the supported battalion on the supported battalion's Ops/F net. However, the criticality of an ongoing or planned mission involving the supported unit may require the supporting unit to assume control using one or more of the supported battalion's FD nets.

3-101. A well thought out alternate data communications plan and a solid FA technical rehearsal are crucial to successful mutual support unit operations.

GENERAL SUPPORT REINFORCING MISSION

INTERNAL NETS

3-102. A FA battalion may be assigned a GSR tactical mission (Table 3-6). The internal nets are the same as for the DS mission.

EXTERNAL NETS

3-103. External nets change to reflect the responsibility of reinforcing to reinforced. The battalion enters the Force FA Cmd (VHF-FM) (voice) net to continue to be responsive to Force FA HQ (GS).

3-104. The battalion enters the Force FA Ops/F 1, 2 or 3 (VHF-FM) (data) net to continue to be responsive to force FA HQ (GS). Through the force FA CF (MSE) (V-FAX) network, the battalion has access to the force FA HQ and other subscribers.

3-105. The battalion enters the Reinforced Bn Cmd (VHF-FM) (voice) net to be immediately responsive to the needs of the reinforced artillery unit. The battalion enters the Reinforced Bn Ops/F (VHF-FM) (data) net to receive tactical FD from the reinforced artillery unit.

3-106. The battalion monitors the Maneuver FS (VHF-FM) and supported unit or force FA Admin/Log nets as required.

3-107. If the battalion is part of an FA brigade, it may also operate on some of the FA brigade nets as required. The exact communications net requirements will depend on METT-TC and unit SOPs.

GENERAL SUPPORT MISSION

INTERNAL NETS

3-108. The FA battalion, with a GS mission, operates on three internal nets (and three as-required nets) (Table 3-7).

3-109. The Bn Cmd (VHF-FM) (voice) net serves the same purpose as that net for a battalion with a DS mission. It has similar subscribers. The Bn Admin/Log (VHF-FM) (voice) net serves the same purpose as the DS Bn Admin/Log (VHF-FM)(V) net and has similar subscribers. The battalion may also use a Bn TA/Intel (VHF-FM)(D) net similar to other battalions.

3-110. The Bn FD 1, 2, and 3 (VHF-FM) (data) nets are not normally all used simultaneously due to less traffic flow in the GS role. Initially one net may be used until the need arises to activate the other(s). Units must open and allocate additional FD nets (FD 2 and FD 3) as required.

EXTERNAL NETS

3-111. When GS to a maneuver force as a part of a FA brigade or DIVARTY, the battalion operates on four external nets and two as required nets.

3-112. The Force FA Cmd (VHF-FM) (voice) net is used for C2, tactical operations, intelligence, and voice coordination by all force FA elements. The force FA operations section is the NCS. Through the Force FA CF MSE (V-FAX) network, the battalion has access to the force FA HQ and other subscribers.

3-113. The Force FA Ops/F 1, 2, and 3 (VHF-FM) (data) nets are identical. They are used for tactical FD, FS coordination, TA, and met data. The force FA FCE is the NCS.

3-114. As required, the Force FA Admin/Log (VHF-FM) (voice) net is used for coordination of all administrative and logistical matters. The force FA ALOC is the NCS.

3-115. The battalion may monitor the Maneuver FS (VHF-FM) voice net.

3-116. If the battalion is part of a FA brigade, it may also, as required, operate on some of the FA brigade nets. The exact communications net requirements will depend on the METT-TC and unit SOPs.

GENERAL SUPPORT TO THE LIGHT INFANTRY DIVISION

3-117. When supporting a light infantry division, the FA battalion operates on three external nets and three as required nets:

- DIVARTY Cmd (VHF-FM) (voice) net.
- DIVARTY Ops/F 1, 2, 3 (VHF-FM) (data) net.
- DIVARTY CF (MSE) (V-FAX) network.
- As required, the Maneuver FS (VHF-FM) (voice) net.
- As required, the DIVARTY TA/Intel (VHF-FM) (voice or data) net.
- As required, the DIVARTY Admin/Log (VHF-FM) (voice) net.